SUPPLEMENT

TO THE

COMPANION

TO THE LATEST EDITION OF THE

BRITISH PHARMACOPŒIA.

FIFTEENTH EDITION.

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TO THE LATEST EDITION OF THE

BRITISH PHARMACOPŒIA,

INCLUDING THE

ADDITIONS,

1890.

BY

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AND

ALFRED HERBERT SQUIRE,

JOINTLY CHEMISTS IN ORDINARY ON THE ESTABLISHMENT OF THE QUEEN;

CHEMISTS IN ORDINARY TO H.R.H. THE PRINCE OF WALES.

LONDON:

J. & A. CHURCHILL,

11, NEW BURLINGTON STREET.

1891.

LONDON:
PRINTED BY J. S. VIRTUE AND CO., LIMITED,
CITY ROAD.

PREFACE.

The greater portion of what is now made Official by the publication of the Additions to the British Pharmacopœia is described in our current edition as Not Official; it therefore becomes necessary to issue a Supplement to the "Companion," making this alteration.

We take this opportunity to add also such notes and comments as have been suggested by more recent experiments.

The "Medicinal Properties" having been so recently revised in our edition, 1890, we have nothing further to add to this section, and have therefore confined our attention more particularly to those points which are of pharmaceutical interest.

P. W. SQUIRE.

A. H. SQUIRE.

413, Oxford Street,

January 28, 1891.

SUPPLEMENT.

ANTIFEBRIN.

(" *Companion*," *page* 68.)

This is now Official under the title—

ACETANILIDUM.

ACETANILIDE.

Syn.—PHENYL-ACETAMIDE.

The general characters are much the same as described in the "Companion."

The melting-point is given as 235° F. (112·8° C.), but a lower figure will be found if the substance be not previously dried at 212° F. (100° C.). A preliminary "fritting" stage is also noticeable, several degrees below the actual melting-point. If heated below Water, it fuses considerably under 212° F. (100° C.).

Although the boiling-point of Acetanilide is stated to be 295° C. (563° F.), it volatilizes to a considerable extent at 100° C. (212° F.); also if an aqueous solution be distilled, Acetanilide may be detected in the distillate by the iso-nitrile test.

It will dissolve in about 18 parts of Boiling Water ("Companion," 1890, gave it as 1 in 25); 1 in 12 of Proof Spirit; about 1 in 40 of Glycerine; it is also soluble in Ether, Benzol, and Chloroform.

With Sulphuric Acid it should form a colourless solution, and when heated with Solution of Potash (which liberates Aniline) and a few drops of Chloroform, Phenyl-isonitrile is formed, recognizable by its disagreeable smell.

The Perchloride of Iron test is not applicable to the boiling saturated aqueous solution as described in the "Additions," but to a *cold* saturated solution. Pure Acetanilide gives a deep red colour with Perchloride of Iron at a boiling temperature, but none when cold.

A cold saturated solution decolorizes Bromine Water, and at the same time throws down a white precipitate, quite distinct even at a dilution of 1 in 2000. This test is referred to in the "Additions" under Phenacetin, but without stating its purpose. If the Bromine Water precipitate be dissolved by heat, it crystallizes out on cooling in long tufted needles.

B.P. Dose.—3 to 10 grains.

ANTIPYRIN.

(" *Companion*," *page* 73.)

This is now Official under the title—

PHENAZONUM.

PHENAZONE.

Syn.—PHENYL-DIMETHYL-PYRAZOLONE $C_6H_5(CH_3)_2C_3HN_2O$. eq. 188.

In its preparation, Aniline Salts are converted by Nitrous Acid into Salts of Diazo-benzene, which in their turn are reduced by Sulphurous Acid to Salts of Phenyl-hydrazine. By acting on this latter with Aceto-acetic Ether, a compound is formed originally supposed to be Methyl-oxyquinizine, but as it is now considered to relate more closely to Pyrrhol than to Chinoline, it has been re-named Phenyl-methyl-pyrazolone. This compound, by the addition of a second Methyl group, forms Phenyl-dimethyl-pyrazolone, sold under the trade mark Antipyrine, and now apparently to be known pharmaceutically as Phenazone.

The characters and tests are practically the same as given in the "Companion," except that the Nitrous Acid test, instead of being worked with Spiritus Ætheris Nitrosi, is performed as follows:—"One grain of Nitrite of Sodium and

two fluid-drachms of a one per cent. aqueous solution of Phenazone yield a nearly colourless liquid, which turns deep green on the addition of ten minims of Diluted Sulphuric Acid."

Another test given is that a mixture of equal volumes of a one per cent. solution and Nitric Acid assumes a yellow colour passing to crimson on warming.

B.P. Dose.—3 to 20 grains.

COCAINÆ HYDROCHLORAS.

(" *Companion*," *page* 153.)

In addition to the Permanganate test given in our last edition, we would add the Maclagan test, which will give no reaction except with a very pure salt.

Dissolve 1 gr. of the sample in 2 fl. oz. Distilled Water, and add 2 drops of Solution of Ammonia. On stirring with a glass rod a crystalline precipitate should be produced in not more than 15 minutes.

On prolonged standing the precipitate may again redissolve.

The following preparation has been introduced:—

LIQUOR COCANIÆ HYDROCHLORATIS.

Hydrochlorate of Cocaine, 33 grs.; Salicylic Acid, ½ gr.; Distilled Water to produce 6 fl. drs.; boil the water, add the Salicylic Acid, and then the Hydrochlorate of Cocaine; cool and add water, if necessary, to produce the required volume.

The solution contains 10 p. c. of Hydrochlorate of Cocaine, and ·15 p. c. Salicylic Acid.

We have kept for the last six months without any visible change, both 10 p. c. and 1 p. c. solutions of Hydrochlorate of Cocaine made by dissolving the salt in a *cold* saturated aqueous solution of Salicylic Acid. If the water, in the official formula, is boiled with some idea of sterilising the solution, it would be more consistent to make up at the finish with *boiled* Distilled Water; but as the solutions, referred to above, were made without heating or any attempt at sterilisation, this does not appear to be of much consequence.

B.P. Dose.—2 to 10 minims.

CONII FOLIA.

(" *Companion*," *page* 160.)

The following preparation has been introduced:—

UNGUENTUM CONII.

Juice of Hemlock, 2 oz.; Hydrous Wool Fat, ¾ oz.; Boric Acid, in fine powder, 10 grs.; evaporate the Juice to 2 drms. at a temperature not exceeding 140° F. (60° C.); add the Boric Acid and the Hydrous Wool Fat, and mix thoroughly.

As the alkaloidal constituents of Conium are exceedingly liable to decomposition by exposure to air and heat, experiments are now in progress to determine to what extent any virtue possessed by the Succus is lost during such prolonged evaporation.

CUPRI SULPHAS.

(" *Companion*," *page* 171.)

The introduction of Picrotoxin into the " Additions " has afforded an opportunity for the insertion of Fehling's solution in the Appendix as a test for reducing bodies allied to Glucose.

As stated in our letter to the *Pharmaceutical Journal*, *January* 10, 1891, p. 616, it is to be regretted that when introducing a test solution for Sugar into the Pharmacopœia, Pavy's Solution was not preferred to Fehling's.

Fehling's Solution is only employed officially for the testing of Picrotoxin, for which Pavy's Solution is equally applicable; but as the latter is much better suited for the estimation of sugar in urine, a purpose to which it is largely applied by the medical profession and chemists, it seems a matter of surprise that this escaped the notice of the Pharmacopœia Committee.

The proportions of Copper Sulphate and Rochelle Salt are the same as given in the "Companion," p. 173, but the Caustic Soda has been increased 50 p. c., the general impression being that increased alkalinity renders the solution more permanent. It should be noted that Fehling's Solution cannot be diluted to an unlimited extent without precipitation on boiling; and as this limit depends upon the alkalinity of the solution, that now Official will bear more dilution than one weaker in alkali, but it is not advisable to dilute this with more than eight times its volume of any fluid to be tested.

The addition of $\frac{1}{10}$ p. c. of Sulphuric Acid to the Copper Solution (recommended by Sutton), which prevents any precipitation of Basic Salt, has not been recognised in the "Additions" formula, which now reads:—

SOLUTION OF POTASSIO-CUPRIC TARTRATE.

No. 1. Sulphate of Copper, 346·4 grs.; Distilled Water, a sufficiency; dissolve the Sulphate of Copper in a portion of the Water, and dilute the solution with more of the water to the volume of 5000 grain-measures.

No. 2. Caustic Soda, $1\frac{3}{4}$ oz.; Tartarated Soda, 4 oz.; Distilled Water, a sufficiency; dissolve the Caustic Soda and Tartarated Soda in a portion of the Water, and dilute the solution with more of the Water to 5000 grain-measures.

When required for use, mix equal volumes of the solutions No. 1 and No. 2.

EUONYMUS.

(*"Companion," pages* 184, 185.)

Following the lines suggested in the "Companion," the Euonymus Root-bark

EUONYMI CORTEX

has now been made Official, to the exclusion of the stem-bark, which yields a less active extract. It is employed in preparing a "Euonymin" under the following title:—

EXTRACTUM EUONYMI SICCUM. *Syn.*—Euonymin.

Moisten 16 oz. of Euonymus Bark, in No. 20 powder, with 8 oz. of a mixture of Rectified Spirit and Distilled Water equal parts; pack it in a percolator, then pour on gradually more of the diluted Spirit until the Euonymus is exhausted. Collect the liquor and evaporate or distil off the spirit. Incorporate so much sugar of milk with the still fluid extract—the actual amount having been ascertained experimentally—that the final product shall contain 80 per cent. of the dry extractive. Then evaporate over a water-bath until the mixture when cold becomes brittle. The mass may be powdered and kept in a well-corked bottle.

Working with a Proof Spirit extract we previously found that Milk Sugar was inferior to Magnesia as a desiccating agent, and our experiments with Rectified Spirit and Water, equal parts, confirm this view.

We find that 16 oz. of Euonymus Bark treated by the Official process yielded 4 oz. of dry extract, of which $\frac{3}{4}$ oz. was Milk Sugar. Although deliquescent the product could with care be powdered, but when kept even in a stoppered bottle it set to a hard mass.

B.P. Dose.—1 to 4 grains.

FERRI CARBONAS SACCHARATA.

(" *Companion*," *page* 193.)

A Ferrous Carbonate pill has been introduced under the following title :—

PILULA FERRI.

The formula is already given " Companion," p. 194, under Pil. Ferri (Blaud), (B.P.C.).

FERRUM.

(" *Companion*," *page* 189.)

The following preparation has been introduced :—

SYRUPUS FERRI SUBCHLORIDI.

Iron wire, 300 grs.; Hydrochloric Acid, 2 oz.; Citric Acid, 10 grs.; Distilled Water, 10 drms.; Syrup, a sufficiency; mix the Hydrochloric Acid with 1 oz. of the Water in a flask, add the Iron Wire, and apply heat gently until action ceases. Remove the flask from the source of heat, add the Citric Acid, and filter the solution through paper into 10 oz. of the Syrup, then pass the remainder of the Water through the small filter into the Syrup. To the product add sufficient Syrup to form 1 pint of the thoroughly mixed fluid. Its specific gravity should be about 1·340.

The above quantities heated to 150° F. for 2 hours, by which time effervescence had entirely ceased, left a residue weighing 64 grs.; a fluid drachm of the finished Syrup will therefore contain about 3½ grs. of anhydrous Ferrous Chloride.

The Official term "Subchloride" has possibly been chosen to distinguish this preparation from a Syrupus Ferri Protochloridi of varying strengths, which has been recommended at intervals since its first mention by Phillips in 1845.

It would appear that the formula for this Syrup has been so arranged that the B.P. maximum dose will contain the same quantity of Iron (1½ grs.) as the B.P. maximum dose of Tinctura Ferri Perchloridi.

60 minims are equal in Iron to 30 minims of Tincture of Steel.

B.P. Dose.—½ to 1 fluid drachm.

GELATINE.

(" *Companion*," *page* 211.)

This is now Official under the title—

GELATINUM.

It is described as "the air-dried product of the action of boiling Water on gelatigenous animal tissues, such as skin, tendons, ligaments, and bones." "In translucent sheets or shreds. The solution in hot Water is colourless and inodorous, and solidifies to a jelly on cooling." These characters apply more particularly to "French Gelatine," which is less coloured than that made in this country, although one British sample in hot Water had less odour than the French.

Commercial Gelatine varies considerably in its gelatinizing power, and some test like the following would be useful as a standard.

Place 5 grs. of Gelatine in a test-tube (¾ inch diameter) with 250 grains of Water for half an hour, warm gently until dissolved, then place the test-tube in water at 60° F., and leave it undisturbed for 30 minutes, by which time a jelly should be formed of such consistence that it will remain in position if the test-tube be inverted.

There is no difficulty in obtaining Gelatine answering this test.

"Gelatine is insoluble in Alcohol and Ether. It dissolves in Acetic Acid. Its

aqueous solution is not precipitated by diluted Acids, Alum, Acetate of Lead, or Perchloride of Iron; it is precipitated by Tannin."

It is evidently introduced for making the following :—

SUPPOSITORIA GLYCERINI.

Gelatine, cut small, ½ oz.; Glycerine, by weight, 2½ oz.; Distilled Water, a sufficiency. Place the Gelatine in a weighed evaporating dish with sufficient Water to cover it; after allowing it to stand for a minute or two pour away the excess of water; set aside until the Gelatine is quite soft, then add the Glycerine. Dissolve over a water-bath and evaporate until the mixture weighs 1560 grains. Pour the product into suppository moulds holding 30, 60, or 120 grain-measures, or having other capacities as required.

Each suppository contains 70 p. c. by weight of Glycerine.

A similar preparation has been in use for many years ("Companion," 1877) as a basis for medicated Pessaries and Suppositories. The formula in the "Companion" arrives at the same result (70 per cent.) *without* evaporation. It is easy by evaporation to obtain a product containing 80 per cent. of Glycerine. The consistency of the mass will vary somewhat with the quality of the Gelatine.

GUMMI RUBRUM.

("*Companion*," *page* 220.)

After having been "Not Official" in every edition of the "Companion" since 1871, it is now introduced into the Pharmacopœia under the title—

EUCALYPTI GUMMI.

The characters are practically the same as those given in the "Companion." "From 80 to 90 p. c. of it is soluble in cold Water forming a neutral solution. It is almost entirely soluble in Rectified Spirit."

B.P. Dose.—2 to 10 grains.

HAMAMELIS.

("*Companion*," *page* 223.)

The bark and leaves of *Hamamelis Virginica* are now Official as—

HAMAMELIDIS CORTEX.
HAMAMELIDIS FOLIA.

The following preparations have been included in the "Additions" :—

EXTRACTUM HAMAMELIDIS LIQUIDUM.

The formula is the same as that given in "Companion," p. 223.

TINCTURA HAMAMELIDIS.

The formula is the same as that given in "Companion," p. 223.

UNGUENTUM HAMAMELIDIS.

Liquid Extract of Hamamelis, 1; Simple Ointment, 9; mix.

The Ointment recommended in "Companion" is made with the solid extract.

HOMATROPINÆ HYDROBROMAS.

$C_{16}H_{21}NO_3HBr$. eq. 356.

("*Companion*," *page* 85.)

It is described as "a white crystalline powder or aggregation of minute prismatic crystals, soluble in 6 parts of cold Water, and in 133 of Ethylic Alcohol."

"The dilute aqueous solution powerfully dilates the pupil of the eye." As this is a property common to Atropine, Hyoscyamine and Hyoscine as well as Homatropine, the value of the following tests will depend upon their power of distinguishing this last alkaloid from the other three which are much cheaper, and therefore in each case we have made the comparison.

"If 2 minims of Chloroform be shaken with 10 minims of a 10 p. c. aqueous solution and Chlorine Water be cautiously added, the Chloroform will assume a brownish colour." This is obviously a test for Hydrobromic Acid, but would it not be better to shake with Chloroform *after*, rather than *before*, the addition of Chlorine Water?

"A 2 per cent. aqueous solution is not precipitated by the cautious addition of solution of Ammonia previously diluted with twice its volume of Water." A 2 per cent. solution of Atropine Sulphate under the same conditions gives a distinct turbidity, but with Hyoscyamine and Hyoscine Hydrobromates no reaction is visible. As a 1 per cent. solution of Atropine Sulphate, however, remains unchanged, and the Guttæ Atropinæ, Homatropinæ, and Hyoscinæ of the *London Ophthalmic Hospital*, each contain but 2 grains of the respective salts per fluid ounce, this test is not capable of distinguishing between these solutions.

"About a tenth of a grain moistened with 2 minims of Nitric Acid and evaporated to dryness on the water-bath yields a residue which is coloured yellow by an Alcoholic Solution of Potash." This is the most characteristic test for Homatropine. Atropine gives a deep purple colouration, as do also Hyoscyamine and Hyoscine, but in the case of the latter two, the colour is less intense and more transient.

"If about a tenth of a grain be dissolved in a little Water, and the solution be made alkaline with Ammonia and shaken with Chloroform, the separated Chloroform will leave on evaporation a residue which will turn yellow and finally brick-red when warmed with about 15 minims of a solution of 2 grains of Perchloride of Mercury in 100 minims of Proof Spirit." Any Salt of Atropine after similar treatment will give the same reaction. Hyoscyamine salts give the yellow precipitate, which, however, does not turn red, and with Hyoscine no formation of Mercuric Oxide appears to take place.

In "Companion," 1890, Homatropine is said to be "very deliqueseent." This is an error, the Alkaloid when pure is unaltered on exposure to air.

B.P. Dose.—$\frac{1}{60}$ to $\frac{1}{20}$ grain.

HYDRASTIS.

("*Companion*," *page* 237.)

This is now Official under the title—

HYDRASTIS RHIZOMA.

The following preparations have been included in the "Additions."

EXTRACTUM HYDRASTIS LIQUIDUM.

The formula is the same as that given in "Companion," p. 237.

TINCTURA HYDRASTIS.

The formula is the same as that given in "Companion," p. 237.

IPECACUANHA.

("*Companion*," *page* 249.)

An "Acetum Ipecacuanhæ" was originally suggested by Mr. G. Johnson, in 1860, advocated by Dr. Dyce Duckworth, in 1872, and introduced into the B. P. C., 1888, from the formula of Mr. R. Wright.

In the transference to the "Additions" the proportion of Acetic Acid has been increased.

ACETUM IPECACUANHÆ.

Ipecacuanha, in No. 20 powder, 1; Diluted Acetic Acid, sufficient to produce 20; moisten the powder with a suitable quantity of the

menstruum and macerate for 24 hours; pack in a percolator and gradually add the Acid until the required volume of the Vinegar of Ipecacuanha is obtained.

It yields a straw-coloured liquid, sp. gr. 1·011, which does not keep for three weeks without throwing down a slight deposit.

B.P. Dose.—5 to 40 minims as an expectorant.

JUNIPERI OLEUM EMPYREUMATICUM.

("*Companion*," *page* 254.)

This is now Official as—

OLEUM CADINUM.

Syn.—Huile de Cade. Juniper Tar Oil.

The following characters are given: "A dark reddish-brown or nearly black, more or less viscid, oily liquid, with a not unpleasant empyreumatic odour, and an aromatic bitter and acrid taste, sp. gr. about ·990. It is soluble in Ether and Chloroform; partially soluble in cold, almost wholly in hot Rectified Spirit. In Water it is very slightly soluble. The filtered aqueous solution is almost colourless and possesses an acid reaction." Of a sample examined by us (sp. gr. ·996) the acidity amounted to ·7 p. c. pure Acetic Acid.

LANOLIN.

("*Companion*," *page* 258.)

Anhydrous Lanolin is now Official under the title—

ADEPS LANÆ.

WOOL FAT.

The melting point is given as from 100° F. (37·8° C.) to 112° F. (44·4° C.). We think that most good samples will approximate to 104° F., the figure given in the "Companion." The only additional test is qualitative:—"The solution in Chloroform poured gently over the surface of Sulphuric Acid acquires a purple-red colour." So far as our observation goes, the colour at first is brownish-red, only a faint purple appearing in the red on standing for over an hour.

The maximum quantity of Water which can be incorporated with Anhydrous Lanolin is $1\frac{1}{4}$ times its weight, not "several times" as stated in the "Companion."

ADEPS LANÆ HYDROSUS. (Hydrous Wool Fat.)

Wool Fat, 70; Distilled Water, 30; melt the Wool Fat in a warm mortar, stirring in the Water gradually and thoroughly.

This is the Official definition of commercial Lanoline.

MAGNESII SULPHAS.

("*Companion*," *page* 273.)

The following preparation has been introduced:—

MAGNESII SULPHAS EFFERVESCENS.

Sulphate of Magnesium in crystals, 100; Bicarbonate of Sodium, 72; Tartaric Acid, in powder, 38; Citric Acid, in powder, 25; Refined Sugar, in powder, 21. Dry the Sulphate of Magnesium at about

130° F. (54·4° C.) until it has lost nearly one-fourth (23 p. c.) of its weight; powder the product, mix it with the Sugar, and then with the other ingredients. Place the mixture in a dish or pan of suitable form, heated to between 200° and 220° F. (98·3 and 104·4° C.), and when the particles of the powder begin to aggregate, stir them assiduously until they assume a granular form; then by means of suitable sieves separate the granules of uniform and most convenient size, and preserve the preparation in well-closed bottles.

The product should weigh about 200.

Dose.—¼ to 1 oz.

MENTHOL.

(" *Companion*," *page* 278.)

The following preparation has been introduced:—

EMPLASTRUM MENTHOL.

Menthol, 2; Yellow Wax, 1; Resin, 7: melt the Wax and Resin together, and as the mixture cools, stir in the Menthol until dissolved.

The plaster melts at such a low temperature that it may be spread without loss of Menthol by evaporation.

MORPHINÆ SULPHAS.

(" *Companion*," *page* 285.)

The following preparation has been introduced:—

LIQUOR MORPHINÆ SULPHATIS.

Sulphate of Morphine, 35 grs.; Rectified Spirit, 2 oz.; Distilled Water to produce 8 oz.; dissolve the Sulphate of Morphine in part of the Water, add the Rectified Spirit, and finally the remainder of the Water.

In the Official formula the word "fluid" has been accidentally omitted in specifying the final volume.

B.P. Dose.—10 to 60 minims.

NITROGLYCERINE.

(" *Companion*," *page* 291.)

Although Nitroglycerine is still without any Official description, another preparation of it has been introduced under the title—

LIQUOR TRINITRINÆ. *Syn.*—Liquor Nitroglycerini; Liquor Glonoini.

Pure Nitroglycerine, 1 part, by weight; Rectified Spirit, sufficient to produce 100 fluid parts; dissolve. Sp. gr. ·844.

A similar formula was given in the "Companion" as "Spiritus Glonoini."

B.P. Dose.—½ to 2 minims.

PARALDEHYDE.

(" *Companion*," *page* 306.)

This is now Official under the name—

PARALDEHYDUM.

The characters given in the "Additions" are those of a good commercial sample.

By fractional crystallization (see our paper in the *C. & D.*, *Dec.* 20, 1890) the melting point, boiling point, and specific gravity may be considerably raised.

The "Additions" states that "it begins to congeal to a clear crystalline mass at 50° F. (10° C.)," but this will only be the case if the liquid be vigorously stirred, or a Paraldehyde crystal dropped in while at that temperature. Under ordinary circumstances it will be cooled considerably below its melting point before crystallization commences, and then the temperature will at once rise to the point indicated.

Absence of Aldehyde is shown by its affording "no colouration when mixed with Solution of Potash or Soda, and allowed to stand for two hours." As this reaction is exceedingly delicate, and faint traces of Aldehyde may be developed in samples originally pure, few retail specimens may be expected to pass this test.

Sulphuric Acid and Chlorine should both be absent, as shown by "an aqueous solution giving no precipitate with either Barium Chloride or Silver Nitrate."

Being less soluble in hot than in cold Water a saturated solution becomes very turbid on warming.

Paraldehyde should be carefully preserved from air and light, on exposure to which, acidity is rapidly developed.

B.P. Dose.—½ to 1½ fluid drachms.

PHENACETIN.

(" *Companion*," *page* 308.)

This is now Official under the name—

PHENACETINUM.

$C_{10}H_{13}NO_2$, eq. 179.

In the process of manufacture, Nitro-phenols are formed by the action of Nitric Acid on Carbolic Acid. The Ortho-nitro-phenol having been separated from the Para-nitro-phenol, a Sodium Salt of this latter is then formed, the Sodium of which is afterwards (by the action of Ethyl Iodide) replaced by Ethyl. By the reducing action of nascent Hydrogen the Nitro-group (NO_2) of this compound is transformed to an Amido-group (NH_2), forming Para-Amidophenetol, otherwise called Para-Phenetidin, which finally by treatment with Glacial Acetic Acid yields Para-acet-phenetidin or Phenacetin.

In our last edition it was described as insoluble in water; in the "Additions" it is given as *sparingly* soluble. The solubility at 60° F. is 1 in 1700, which for a substance ordinarily given in 10 gr. doses, is practically insoluble. At 212° F. the solubility is about 1 in 50. It is also stated in the "Additions" to be soluble 1 in 16 of Rectified Spirit, and in "Companion" 1 in 30. Both are wrong; the correct solubility being 1 in 21. When dissolved 1 in 20 it separates on standing for a day at 60° F.

Two of the three tests given are for the purpose of detecting an admixture of Antifebrin, with which it is liable to be adulterated. "Five grains boiled with 2 fluid drachms of Liquor Potassæ, and again heated with five drops of Chloroform should give no disagreeable smell of Isonitrile," see p. 7.

"A cold saturated aqueous solution should not become turbid on addition of Bromine Water." This will detect 1 per cent. of Antifebrin in Phenacetin, but the reaction is not given under Acetanilide in the "Additions."

The qualitative test for detection of Phenacetin, which distinguishes it from all other Antipyretics, is thus described: "One grain boiled with 20 minims of Hydrochloric Acid for about half a minute yields a liquid which, diluted with ten times its volume of Water, cooled and filtered, assumes a deep red colouration on the addition of Solution of Chromic Acid." In absence of Chromic Acid, Solution of Potassium Bichromate answers equally well.

B.P. Dose.—5 to 10 grains.

PICROTOXINUM.

(" *Companion*," *page* 312.)

This is now Official, and is described as "colourless and inodorous prismatic crystals, possessing a bitter taste. Melts at 378° F. (192·2° C.).

It is soluble in 330 parts of cold water, leaving only a trace of residue, and in 35 parts of boiling water; also in 13 parts of cold and 3 parts of boiling Rectified Spirit."

In the current edition of the "Companion," the U.S.P. solubilities were inserted provisionally in the proof sheets and escaped correction to the experimental figures, which are 1 in 334 of Water, and 1 in 13½ of Rectified Spirit, both as usual at 60° F.

"It is soluble in 10 parts of Solution of Potash, and the resulting liquid on boiling immediately reduces Fehling's solution." This test may also be applied to a cold saturated solution in Water, 5 cc. of which will give a distinct reaction. If to this quantity 1 cc. Pavy's Solution be added, and the liquid boiled, the blue colour will completely disappear.

"Heated on Platinum foil, the crystals melt, forming a yellowish liquid which by further heating chars and is at length completely dissipated. Its aqueous solution is not precipitated by solutions of Perchloride of Mercury, Perchloride of Platinum, or Tannic Acid. It dissolves in Sulphuric Acid with a saffron-yellow colour."

B.P. Dose.—$\frac{1}{100}$ to $\frac{1}{30}$ grain.

RICINI OLEUM.

("*Companion*," *page* 352.)

The following preparation has been introduced:—

MISTURA OLEI RICINI.

Castor Oil, 6 fl. drms.; Oil of Lemon, 10 mins.; Oil of Cloves, 2 mins.; Syrup, 1½ fl. drms.; Solution of Potash, 1 fl. drm.; Orange Flower Water to produce 2 fl. oz. Mix the oils in a mortar, then incorporate one-third of the Solution of Potash and afterwards the Syrup, then an additional third of the Solution of Potash, then gradually half of the Orange Flower Water, the remainder of the Solution of Potash, and lastly sufficient Orange Flower Water to produce the required volume.

This is Dr. Macnamara's formula, as given by him in "Neligan's Medicines" (1867) p. 205.

A whiter and more permanent emulsion is produced by a slight modification of the method, thus:—Mix intimately in a mortar the Oils with the Syrup, and add half the quantity of the Solution of Potash, then gradually the remainder of the Solution of Potash previously mixed with the Orange Flower water.

The emulsion is produced by the saponification of a small proportion of the Oil by the Liquor Potassæ. As 1 part of Caustic Potash (KHO) is capable of decomposing 5½ parts of Castor Oil, the quantity of Potash in the above formula, if fully combined with Fatty Acid, would form 26 grs. of dry Soap; but it would appear from an analysis of the emulsion, that about half of the Potash remains uncombined.

Exception has been taken to the excessive quantity of Oil of Lemon (2½ times the maximum dose of the B.P) contained in this mixture; but it is probably not more objectionable than the nauseous flavour of the alkaline emulsion without it.

B.P. Dose.—½ to 2 fluid ounces.

SACCHARINUM.

("*Companion*," *page* 357.)

This is now Official under the title—

GLUSIDUM.

GLUSIDE.

Syn. GLUCUSIMIDE.

Although in the "Additions" the formula $C_6H_4CO.SO_2.NH$. is attached to the synonym Benzoyl-sulphonic-imide, it is not to be inferred that commercial

Saccharin is sufficiently pure as to allow of its representation by this or any other formula.

The characters and tests are practically all contained in the current edition of the "Companion," excepting the following qualitative reaction: "On evaporating either Saccharin or 'Soluble Saccharin' with excess of strong Solution of Soda, maintaining the residue in a state of semi-fusion for a few minutes, cooling, dissolving in Water, faintly acidulating with Hydrochloric Acid, and adding a few drops of Solution of Perchloride of Iron, a reddish-brown or purplish colour is developed." During the fusion an alkaline Sulphite and Carbolate, as well as Salicylate, appear to be formed, as on acidulation the smell of Carbolic and Sulphurous Acids are both noticeable.

SODA TARTARATA.

("*Companion*," *page* 378.)

"Seidlitz Powder" is now made Official as—

PULVIS SODÆ TARTARATÆ EFFERVESCENS.

Tartarated Soda in dry powder, 120 grs.; Bicarbonate of Sodium in dry powder, 40 grs.; mix and wrap in blue paper. Tartaric Acid in dry powder, 38 grs.; wrap in white paper.

B.P. Dose.—The former powder dissolved in nearly half a pint of cold or warm Water, and the latter powder then added.

SODII BENZOAS.

("*Companion*," *page* 380.)

This is now Official with the formula—

$$NaC_7H_5O_2, \text{ eq. } 144.$$

"This salt may be obtained by neutralizing Benzoic Acid with solution of Carbonate of Sodium and evaporating to dryness."

"A white obscurely crystalline or amorphous powder, inodorous, or having a faint benzoic odour, of a sweetish alkaline taste, and a faint alkaline reaction. Very soluble in water; soluble in 24 fluid parts of Rectified Spirit, and in 12 of boiling Rectified Spirit. When a quantity of the salt weighing 10 grs. is heated, it melts, emitting a benzoic odour, then chars, and finally leaves a residue weighing about 3·68 grains, which, when dissolved in water, requires for neutralization from 69 to 70 grain-measures of the volumetric solution of Oxalic Acid. An aqueous solution give a yellowish or flesh-coloured precipitate when mixed with solution of Persulphate of Iron."

In former editions of the "Companion" the formula of this compound was given with an additional H_2O, this being the composition of the crystallized salt. But as the crystals are efflorescent, the formula now given approximates more closely (but yet not exactly) to the commercial salt made by the now Official method of evaporation to dryness.

Three commercial samples lately examined contained an average of 4 p. c. of water, which has not been taken into account in the above quantitative tests, the figures which are given being apparently theoretical rather than experimental, and calculated upon an anhydrous salt. The sample should, therefore, be previously dried at 212° F. (100° C.) before weighing off the quantity to be tested.

Owing also to the practical impossibility of burning the residual charcoal from out of the semi-fused mass of Sodium Carbonate, we think the weight of the residue

(3·68 grs.) will not be attainable. With the most careful ignition, 4·2 grs. is the lowest weight we have been able to obtain after heating for an hour over a Bunsen burner.

B.P. Dose.—10 to 30 grains.

SODII NITRIS.

(" *Companion*," *page* 386.)

This is now Official. It is described as "a white or yellowish white deliquescent crystalline salt very soluble in water."

It is frequently found in commerce fused into sticks, with a crystalline fracture.

It is prepared by fusing Sodic Nitrate with reducing substances such as metallic Lead, Barium Sulphide, &c., and if the reduction has been carried too far, free alkali is formed and afterwards becomes carbonated. The "Additions" therefore, defines the aqueous solution as being neutral or slightly alkaline, and giving no more than traces of precipitate with solution of Chloride of Calcium.

The qualitative tests are:—"The solution when mixed with diluted Sulphuric Acid yields a gas which forms ruddy fumes in contact with the air."

"The aqueous solution, when mixed with solution of Sulphate of Iron and Acetic Acid, becomes of a deep brown colour." Acetic Acid is here used to differentiate between Nitrite and Nitrate; the latter requiring a stronger acid, such as Sulphuric, to produce the brown colour.

The quantitative testing is performed as follows: "One grain of the Salt, dissolved in water and introduced into a nitrometer and tested with Iodide of Potassium and diluted Sulphuric Acid, should liberate not less than 325 grain-measures of Nitric Oxide, the gas being almost completely absorbed by strong solution of Sulphate of Iron, corresponding to not less than 95 p. c. of Nitrite of Sodium." 98 p.c. is a common figure obtained from good commercial samples.

In the absence of a nitrometer it may be readily estimated with a standard solution of Permanganate of Potassium; 0·1 gramme of Pure Nitrite of Sodium being equal to 29 cc. $\frac{N}{10}$ solution of Permanganate (containing 3·156 grammes in the litre), or to 9·1 cc. of the official Liquor Potassii Permanganatis.

B.P. Dose.—2 to 5 grains.

SODII PHOSPHAS.

(" *Companion*," *page* 386.)

The following preparation has been introduced—

SODII PHOSPHAS EFFERVESCENS.

Phosphate of Sodium in crystals, 100; Bicarbonate of Sodium, 100; Tartaric Acid in powder, 54; Citric Acid in powder, 36. Dry the Phosphate of Sodium until it has lost rather more than half (60 per cent.) of its weight; powder the product and mix it with the other ingredients. Place the mixture in a dish or pan of suitable form heated to between 200° and 220° F. (93·3° and 104·4° C.); and when the particles of the powder begin to aggregate, stir them assiduously until they assume a granular form; then by means of suitable sieves, separate the granules of uniform and most convenient size, and preserve the preparation in well-closed bottles. The product should weigh about 200.

B.P. Dose.—$\frac{1}{4}$ to $\frac{1}{2}$ ounce.

SODII SULPHAS.

(" *Companion*," *page* 387.)

The following preparation has been introduced—

SODII SULPHAS EFFERVESCENS.

Sulphate of Sodium in crystals, 100; Bicarbonate of Sodium in powder, 100; Tartaric Acid in powder, 54; Citric Acid in powder, 36. Dry the Sulphate of Sodium until it has lost rather more than half (56 per cent.) of its weight; powder the product and mix it with the other ingredients. Place the mixture in a dish or pan of suitable form heated to between 200° and 220° F. (93·3 and 104·4° C.), and when the particles of the powder begin to aggregate stir them assiduously until they assume a granular form; then by means of suitable sieves, separate the granules of uniform and most convenient size, and preserve the preparation in well-closed bottles.

B.P. Dose—$\frac{1}{4}$ to $\frac{1}{2}$ ounce.

STRAMONII FOLIA.

(" *Companion*," *page* 395.)

The dried leaves of *Datura Stramonium*.

Official in the British Pharmacopœias of 1864 and 1867, omitted in 1885, and re-introduced into " Additions " 1890.

As stated in the " Companion," 1864 and all subsequent editions, it is much used for asthma, in the form of cigarettes and smoking mixtures.

STROPHANTHUS.

(" *Companion*," *page* 396.)

This is now Official, and the following preparation has also been introduced :—

TINCTURA STROPHANTHI.

The formula is the same as that given in the " Companion," p. 396.

The " Additions " authorizes the use of " commercial ether " free from Alcohol and water. *See* Æther Methylatus, " Companion," p. 41.

SULPHONAL.

(" *Companion*," *page* 398.)

This is now Official, and retains its name—

SULPHONAL.

$C_7H_{16}S_2O_4$. eq. 228.

In the preparation of this body, Mercaptan (Ethyl Hydrosulphide) is combined with Acetone to form Mercaptol, which, by oxidation with Potassium Permanganate, yields Sulphonal.

By heating with powdered Potassium Cyanide (or even powdered charcoal) it is again reduced to Mercaptan, recognizable by the disagreeable garlic odour; and if the Cyanide residue be dissolved in water, and rendered acid with Hydrochloric Acid, the addition of Ferric Chloride produces a blood-red colour, owing to the previous formation of Sulphocyanide.

Sulphonal should be neutral to test paper, and should leave no residue on ignition.

The solubilities generally agree with those given in the " Companion," except in

the case of Rectified Spirit. The "Additions" gives "*about* 1 in 50"; German Pharmacopœia (Alcohol, ·830-·834), 1 in 65; "Companion" 1890, 1 in 90. By cold saturation over very fine powder, we now find it soluble 1 in 78.

B.P. Dose.—15 to 40 grains.

SULPHUR PRÆCIPITATUM.

(" *Companion*," *page* 399.)

TROCHISCI SULPHURIS COMP.

This lozenge, introduced by Sir A. Garrod, is now Official under the title of—

TROCHISCI SULPHURIS.

Precipitated Sulphur, 3600 grs.; Acid Tartrate of Potassium, 720 grs.; Refined Sugar in powder, 5760 grs.; Gum Acacia in powder, 720 grs.; Tincture of Orange Peel, 720 mins.; Mucilage of Acacia, 720 mins.; mix the Tincture of Orange with the powders, and add the mucilage to form a suitable mass. Divide into 720 lozenges, and dry them in a hot-air chamber at a moderate temperature.

Each lozenge contains 5 grains of Sulphur.

B.P. Dose.—1 to 6 lozenges.

Official Names in Roman; all others in Italics.

INDEX.

The names adopted by the British Pharmacopœia are put in Roman letters; all others, whether referring to Official or Not Official Medicines, are put in Italics.

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IN THE PRESS.

Sixth Edition, 1891.

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J. & A. CHURCHILL.